

Grade: 10 (15-16 year olds) **Course:** Chemistry **Concept:** Acids and Alkali **MYP**
Area of Interaction: Health and Social Education

Guiding Questions/Statements	Content	Skills (Content Skills, Scientific Process Skills, MYP Area of Interaction Skills)	Activities and <i>Assessments (Assessed items in bold italics)</i>
<p>CONCEPT: There is a common naming system for all acids and bases that assists scientists in communication and problem solving.</p> <p>Which is the more effective antacid, Tums or Diavol? (HSE)</p> <p>Why can't we add any base to a lake killed by acid rain?</p>	<p>Naming acids and bases</p> <p>Definition of acid</p> <p>pH and indicators</p> <p>Definition of base</p> <p>Definition of alkali</p> <p>Neutralization reactions</p> <p>Reactions of acids with metals, bases, and carbonates.</p> <p>Making soluble salts</p> <p>Making insoluble salts</p> <p>Metal oxides</p> <p>Nonmetal oxides</p> <p>Titration</p> <p>Calculating</p> <p>Concentration using titration</p> <p>Biological workings of antacids</p> <p>Scientific Process</p> <p>Higher Order Thinking Skills</p>	<p>Content Skills</p> <ol style="list-style-type: none"> Describe an acid as a substance containing hydrogen that can be replaced by a metal to form salt. Know that the hydrogen can be released in aqueous solution as H^+ (aq) and pH is related to the concentration of hydrogen ions. Describe a base as a substance that will neutralize an acid to form a salt and water. Know that alkaline solutions contain excess OH^- ions. Know the general form of the pH scale. Understand that neutralization involves the reaction between H^+ and OH^- to form water. Recognize the chemical formulae of HCl, H_2SO_4, and HNO_3 and name these acids. Describe the reactions of the common mineral acids with metals, bases, and carbonates and their effect on universal indicator. Write word and formulae equations for simple examples of these reactions. Describe how to prepare a soluble salt from a suitable acid and an insoluble base or carbonate. Know that alkalis are soluble bases and recognize the names and formulae of NaOH, KOH and NH_4OH Know that the oxides of metals tend to be basic, and that non-metal oxides give acidic solutions. Appreciate that insoluble oxides do not affect the pH of water. Describe the preparation of a soluble salt by controlled neutralization followed by evaporation or crystallization. Carry out simple titration experiments. Understand that salts are ionic compounds and that these ions separate and have an independent existence when dissolved. Understand the chemistry meaning of precipitation and give examples of precipitation reactions to form insoluble salts. Calculate the concentration of any solution, or the volume, or the number of moles of solute, when given the other two quantities. Calculate the concentration of an unknown acid or base by titrating it with an acid or base of known 	<ol style="list-style-type: none"> Expt: Making salts(1). Neutralizing an alkali with an acid Expt: Making salts(2). Neutralizing an alkali with an acid (titration) Expt: Making salts(3). Neutralizing an acid with an insoluble base Expt: Making salts (4). Reacting acids with metals. Expt: Making salts(5). Neutralizing an acid with carbonates Expt: Making salts(6). Double displacement reactions <p>7. Expt and lab report: Calculating concentration of an acid using a titration (Criteria B, D, E, F)</p> <ol style="list-style-type: none"> Expt: Comparing two brands of antacid to determine chemically which is the most effective <p>9. Write a script and videotape a TV commercial of all aspects, chemical and biological, of the superior antacid (Criterion A)</p> <p>10. Unit Test with questions at the three levels 1-2, 3-4, 5-6. (Criterion C)</p> <p>Key for the six science criteria:</p> <p>A One World</p> <p>B Communication</p> <p>C Knowledge & Understanding</p> <p>D Scientific Inquiry</p> <p>E Data Processing</p> <p>F Attitudes in Science</p>

		<p>concentration.</p> <p>Scientific process skills-</p> <p>Write up an experiment – with correct citation.</p> <p>Carry out experiments in a team</p> <p>Carry out experiments alone.</p> <p>Record observations and explain hypotheses.</p> <p>Plot graphs properly from expt data</p> <p>Health and Social Education –</p> <p><i>Knowledge and Skills</i> – Know what lifestyle choices increase the chances of stomach ulcers</p> <p><i>Attitudes</i> – Respect your health</p> <p><i>Awareness</i> – Be aware that advertisements can misrepresent</p> <p><i>Action</i> – Compare antacid drugs available in Vietnam for effectiveness</p>	
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